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Bulletin I20262 Rev.A 06/03

International
IOR Rectifier

8AF SERIES

PRESSFIT RECTIFIER DIODES

50 A

Features and Descriptions

- Convenient pressfit package
- Available with and without leads
- High surge capabilities

Application

- Welders, Battery charges, Alternators

Major Ratings and Characteristics

Parameters		8AF	Units
$I_{F(AV)}$		50	A
	@T_C	150	°C
$I_{F(RMS)}$		79	A
I_{FSM}	@50Hz	714	A
	@60Hz	747	A
I^2t	@50Hz	2546	A^2s
	@60Hz	2324	A^2s
$I^2\sqrt{t}$		25455	$A^2\sqrt{s}$
V_{RRM} range		100 to 800	V
T_J		-65 to 195	°C

IR Case Style B-47

ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM}, maximum repetitive peak reverse voltage V	V_{RSM}, maximum non-repetitive peak rev. voltage V	I_{RRM} max. @ T_J = 150°C mA
8AF	1	100	150	5
	2	200	300	5
	4	400	500	5
	8	800	900	5

Forward Conduction

	Parameter	8AF	Units	Conditions		
$I_{F(AV)}$	Maximum average forward current	50	A	180° conduction, half sine wave		
	@ Case temperature	150	°C			
$I_{F(RMS)}$	Maximum RMS forward current	79	A			
I_{FSM}	Maximum peak, one-cycle forward, non-repetitive surge current	714	A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial T_J = T_J max.
		747		t = 8.3ms		
		600		t = 10ms	100% V_{RRM} reapplied	
		628		t = 8.3ms		
I^2t	Maximum I^2t for fusing	2546	A^2s	t = 10ms	No voltage reapplied	
		2324		t = 8.3ms		
		1800		t = 10ms	100% V_{RRM} reapplied	
		1643		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	25455	$A^2\sqrt{s}$	t = 0.1 to 10ms, no voltage reapplied		
$V_{F(TO)1}$	Low level value of threshold voltage	0.60	V	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), T_J = T_J max.		
$V_{F(TO)2}$	High level value of threshold voltage	0.68		(π x $I_{F(AV)}$ < I < 20 x π x $I_{F(AV)}$), T_J = T_J max.		
r_{f1}	Low level value of forward slope resistance	6.66	mΩ	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), T_J = T_J max.		
r_{f2}	High level value of forward slope resistance	6.25		(π x $I_{F(AV)}$ < I < 20 x π x $I_{F(AV)}$), T_J = T_J max.		
V_{FM}	Maximum forward voltage drop	1.45	V	T_J = 25°C, I_{FM} = π x rated $I_{F(AV)}$		

Thermal and Mechanical Specifications

	Parameter	8AF	Units	Conditions
T_J	Max. junction operating temperature range	- 65 to 195	°C	
T_{stg}	Storage temperature range	- 65 to 195		
R_{thJC}	Max. thermal resistance, junction to case	0.60	K/W	DC operation
R_{thCS}	Typical thermal resistance, case to heatsink	0.50		As per mounting details
wt	Approximate weight	10 (0.36)	g (oz)	
	Case style	B-47		See outline table

MOUNTING: A 12.6 ± 0.02mm (0.496 to 0.497 inch) diameter hole should be drilled in heatsink, the leading edge chamfered to 0.038mm (0.015 inch) x 45°. The diode should then be press fitted, ensuring that the sides of the diode are kept parallel to the sides of the hole.

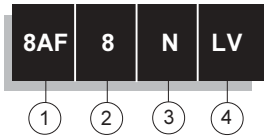
ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.042	0.026	K/W	$T_J = T_J$ max.
120°	0.045	0.043		
90°	0.06	0.06		
60°	0.10	0.10		
30°	0.15	0.15		

Ordering Information Table

Device Code



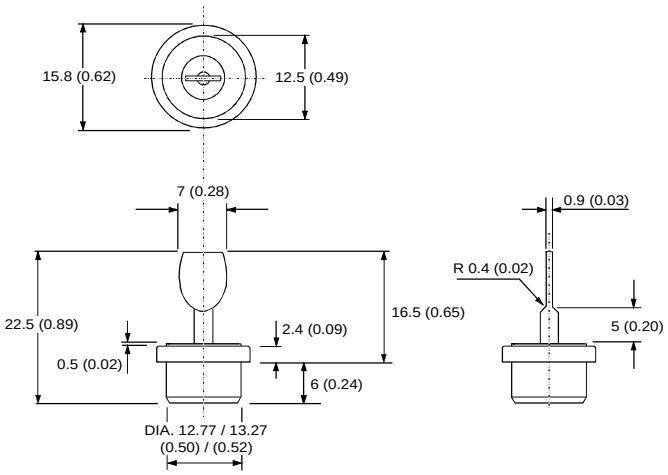
1 - Essential part number

2 - Voltage code: Code x 100 = V_{RRM} (See Voltage Ratings Table)

3 - N = Normal Polarity (cathode to case)
R = Reverse Polarity (anode to case)

4 - PP = Without Lead
LH = Horizontal Lead
LV = Vertical Lead
Available as special product - Contact Factory

Outline Table



All dimensions in millimeters (inches)

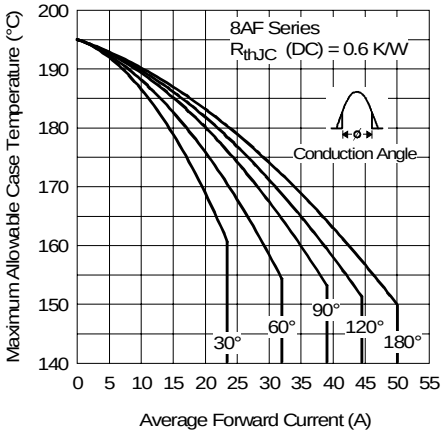


Fig. 1 - Current Ratings Characteristics

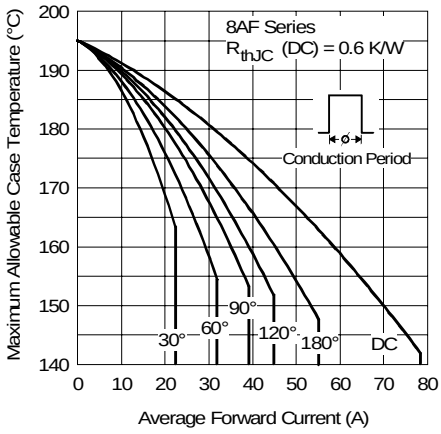


Fig. 2 - Current Ratings Characteristics

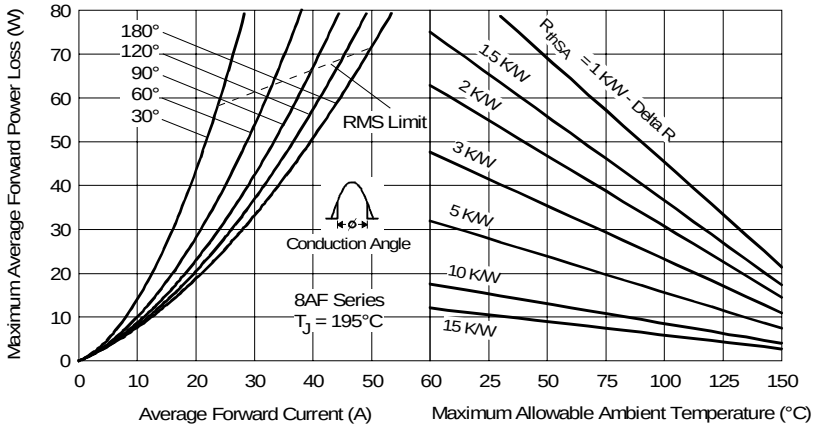


Fig. 3 - Forward Power Loss Characteristics

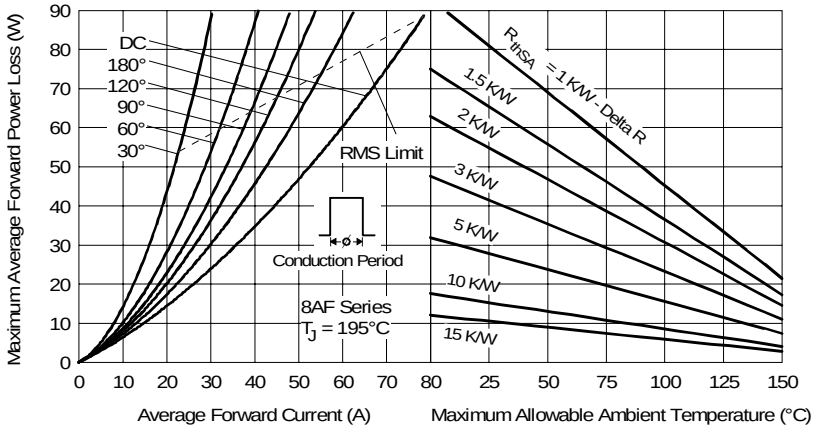


Fig. 4 - Forward Power Loss Characteristics

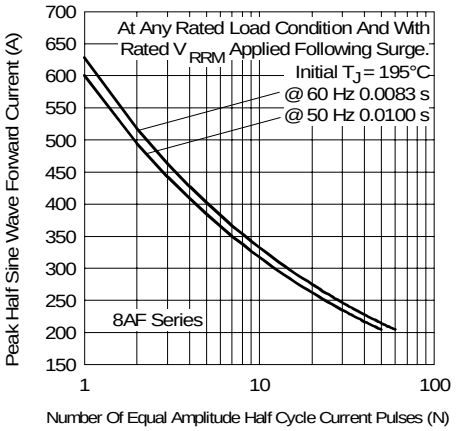

At Any Rated Load Condition And With
Rated V RRM Applied Following Surge.
Initial T J = 195°C
@ 60 Hz 0.0083 s
@ 50 Hz 0.0100 s
8AF Series
Peak Half Sine Wave Forward Current (A)
Number Of Equal Amplitude Half Cycle Current Pulses (N)

Fig. 5 - Maximum Non-Repetitive Surge Current

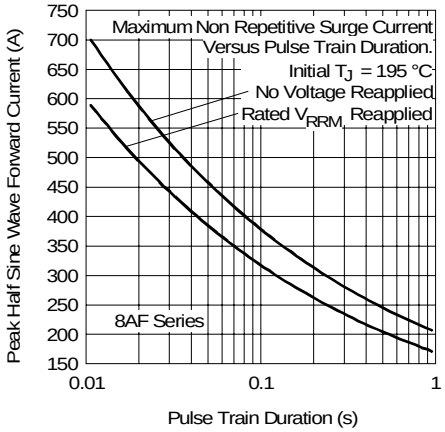

Maximum Non Repetitive Surge Current
Versus Pulse Train Duration.
Initial T J = 195 °C
No Voltage Reapplied
Rated V RRM Reapplied
8AF Series
Peak Half Sine Wave Forward Current (A)
Pulse Train Duration (s)

Fig. 6 - Maximum Non-Repetitive Surge Current

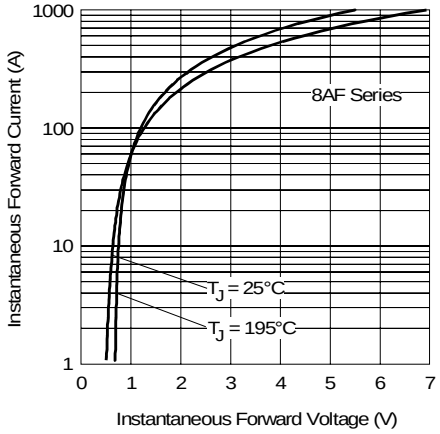


Fig. 7 - Forward Voltage Drop Characteristics

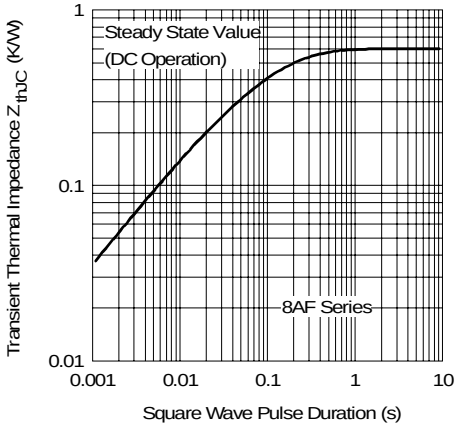


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic